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# United States Department of Agriculture,

## BUREAU OF PLANT INDUSTRY,

### Seed and Plant Introduction and Distribution,

WASHINGTON, D. C.

#### ALFALFA (*Medicago sativa*).

[Instructions adapted to Ohio, Michigan, Indiana, Illinois, Iowa, Missouri, eastern Kansas, and eastern Nebraska.]

**Description.**—Alfalfa is an upright, smooth, perennial, leguminous forage plant. It occupies the same place in western agriculture that clover does in the East. Alfalfa is to be preferred to red clover even in the eastern sections of the country wherever it can be successfully grown. The reason for this is that pound for pound the hay is a much better feed than clover, and three good hay crops may usually be procured each season. This crop lends itself readily to soiling purposes, as it quickly recovers and resumes growth after cutting. It is better adapted for this purpose than it is for pasturage. Since it is a perennial, it will last for a number of years.

**Soil requirements.**—A deep, fertile, well-drained, nonacid soil, reasonably free from weeds, is required. The long taproots necessitate a deep, permeable soil. The inability of the plants to withstand poor drainage makes it necessary to provide soil naturally well drained. Alfalfa will fail if sown on soil lacking in fertility or one deficient in lime. Probably no other field crop requires lime to such an extent as does alfalfa. With the possible exception of limestone regions all soils in the area specified may be safely considered to require liming for alfalfa. Even in the limestone regions, except in Kansas and Nebraska, liming is often necessary. At least a ton of lime per acre is generally required, especially east of the Mississippi, and more than this may be necessary on the heavier soils. Well-rotted barnyard manure is the most satisfactory fertilizer. If this is not available, a liberal application of commercial fertilizer should be made unless it is known that the soil in question is not lacking in fertility. This fertilizer should be reasonably rich in potash and phosphoric acid, but may be poor in nitrogen.

**Preparation of the soil.**—The soil should be well settled, but finely pulverized on top. To allow for the necessary settling at least six weeks should intervene between the time of plowing and that of seeding. Frequent harrowings should be given the land before seeding, to settle the ground, produce the necessary fine tilth, and destroy the weed seedlings as they start.

**Inoculation.**—Inoculation with nitrogen-fixing bacteria is essential unless the soil is known to be naturally supplied with these germs. This may be accomplished either by the use of artificial cultures or with soil from an old alfalfa field. If the artificial culture is used, the seed should be inoculated shortly before planting. If soil from an old alfalfa field is used instead of an artificial culture, it is essential that the soil be taken from around plants well supplied with tubercles. This soil should be broadcasted at the rate of 250 to 500 pounds per acre and harrowed in immediately. The spreading should take place on a cloudy day or in the evening, as the sun's rays are destructive to the germs. Care should be taken to avoid introducing seeds of noxious weeds and fungous diseases. Soil from the roots of sweet-clover plants will also inoculate alfalfa. It should be spread as suggested for soil from an old alfalfa field.

**Seeding.**—The seed should be sown alone at the rate of 20 to 30 pounds per acre. It may be drilled or sown broadcast and covered lightly with a smoothing harrow. A much more even stand may usually be secured by seeding one half of the seed north and south and the other half east and west. If sown in the spring the soil can not usually be put in proper condition and become sufficiently warm before the middle or the last of May. If weeds threaten to prove troublesome, it may be necessary to harrow the plowed ground repeatedly until midsummer or later, to destroy the successive crops of weeds as they germinate. The seed can then be sown and plants still attain a considerable size before winter. Alfalfa is more likely to winterkill under this last method of seeding, but this danger may be less than that of the weeds when sown in the spring. This is especially true if the ground is foul with seeds of noxious weeds. For this reason it is usually advisable to seed alfalfa upon land which has been in clean-cultivated crops for a number of years. Corn stubble can be disked in the spring and less time be required for allowing the ground to settle than when plowed. In the section specified beardless barley and even oats have been successfully used as a nurse crop. If a nurse crop is used, a light seeding should be made and cut for hay if it threatens to choke out the alfalfa.

**Treatment of the stand.**—Unless the weeds threaten to choke out the young plants they should not be clipped until they are about 12 or 15 inches high and are beginning to bloom. The cutter bar of the mower should be set high, as the alfalfa will be likely to be choked out by the next crop of weeds if cut low. If the first cutting is light, it may be left on the land as a mulch. If heavy enough to smother the alfalfa plants, it should be removed. Ordinarily alfalfa should be cut for hay when beginning to bloom. Under no circumstances should the field be pastured during the first two years, and even an old field had best be pastured sparingly. If green feed is desired, soiling is the best practice.

**Need of experimenting.**—In most parts of the section specified alfalfa is still in the experimental stage. The data at hand indicate that there is, perhaps, no other crop so rigid in its requirements as to soil and treatment. Failure to provide any one of the indicated requirements usually means failure. For this reason one's first attempts should be limited to a comparatively small area. It is often necessary to make several failures with alfalfa before its requirements are thoroughly understood. This means a loss of several years' time unless a definite experiment is carried out the first season. Divide the area chosen into a number of subdivisions and give each a different treatment, especially as regards the quantity of lime and fertilizer used. By watching the effect of these different treatments the experience which would otherwise require several seasons can be obtained at the end of the first year. The treatment given the subdivision showing the best results can be applied to a larger area the succeeding season. The successful plots will clearly show what it is necessary to do to produce a successful stand. The plots that prove a failure will show just as clearly what not to do. The results of these tests should be carefully recorded and made available to all interested neighbors.

A rough diagram of the plots should be made at the time the plots are laid out. This together with the notes made from time to time as to the success of the different methods of treatment will make the results of value for future reference.



